

PATENT COOPERATION TREATY

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 CHERNOFF, VILHAUER,
 McCLUNG & STENZEL

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
KEVIN L. RUSSELL
1600 ODS TOWER
601 SW SECOND AVENUE
PORTLAND, OREGON 97204

PCT

NOTIFICATION OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of Mailing (day/month/year) 30 DEC 2004			
Applicant's or agent's file reference KLR 0594.0269		IMPORTANT NOTIFICATION	
International application No. PCT/US02/25573	International filing date (day/month/year) 12 August 2002 (12.08.2002)	Priority date (day/month/year) 20 February 2002 (20.02.2002)	
Applicant PLANAR SYSTEMS, INC.			

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Tarifur R Chowdhury Telephone No. (571) 272-2287 <div style="text-align: right;"> <i>Jean Proctor</i> Paralegal Specialist </div>
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference KLR 0594.267	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US02/25573	International filing date (day/month/year) 12 August 2002 (12.08.2002)	Priority date (day/month/year) 20 February 2002 (20.02.2002)
International Patent Classification (IPC) or national classification and IPC IPC(7): G02F 1/136, 1/1335 and US Cl.: 349/41, 42, 48, 96		
Applicant PLANAR SYSTEMS, INC.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.
- ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of ___ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 22 October 2002 (22.10.2002)	Date of completion of this report 10 April 2004 (10.04.2004)
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Tarifur R Chowdhury Telephone No. (571) 272-2298 Jean Proctor Paralegal Specialist

Form PCT/IPEA/409 (cover sheet)(July 1998)

I. Basis of the report1. With regard to the **elements** of the international application:*

- ☒ the international application as originally filed.
- ☒ the description:
pages 1-18 as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.
- ☒ the claims:
pages 19-27, as originally filed
pages NONE, as amended (together with any statement) under Article 19
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.
- ☒ the drawings:
pages 1-11, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.
- ☐ the sequence listing part of the description:
pages NONE, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE
- ☒ the claims, Nos. NONE
- ☒ the drawings, sheets/fig NONE

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US02/25573

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. STATEMENT

Novelty (N)	Claims <u>1-9, 12-15, 17, 19-22, 24-26, and 30-45</u>	YES
	Claims <u>10,11,16,18,23 and 27-29</u>	NO
Inventive Step (IS)	Claims <u>7,8,40 and 41</u>	YES
	Claims <u>1-6,9-39 and 42-45</u>	NO
Industrial Applicability (IA)	Claims <u>1-45</u>	YES
	Claims <u>NONE</u>	NO

2. CITATIONS AND EXPLANATIONS

Please See Continuation Sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the questions whether the claims are fully supported by the description, are made:

Claims 10 and 29 are objected to under PCT rule 66.2(a)(v) as lacking clarity under PCT Article 6 because claims are indefinite for following reason(s):

Claim 10 recites the limitation "said first" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 29 recites the limitation "said light valve" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Claims 10, 11, 16, 18 and 23 lack novelty under PCT Article 33(2) as being anticipated by Kim, USPAT 5,568,292.

Kim discloses and shows in Fig. 5, an active matrix light sensitive display comprising:

(a) a light valve including a front polarizing element (11), a rear polarizing element (11), and a liquid crystal material (applicant's light rotating material) located between the front polarizing element and the rear polarizing element; and (b) a plurality of thin film transistors (3) (applicant's light sensitive elements) located between either the front polarizing element or the rear polarizing element and the light rotating material. Accordingly, claims 10, 11 and 23 are anticipated.

As to claim 16, Kim also shows in Fig. 5 that the display also comprising:

a transparent counter electrode layer (9) (applicant's front electrode layer), a transparent picture element electrode (2) (applicant's rear electrode layer), and a liquid crystal material (applicant's light rotating material) located between the front electrode layer and the rear electrode layer wherein the front electrode layer and the rear electrode layer defining a plurality of pixels within the light rotating material.

Accordingly, claim 16 is anticipated.

As to claim 18, Kim also shows in Fig. 5 that the plurality of light sensitive elements (3) are located at least partially between the pixels, with respect to a perpendicular direction to the front of the display.

Claims 27-29 lack novelty under PCT Article 33(2) as being anticipated by Noritake et al., (Noritake), US 2001/0046013.

Noritake discloses (page 2, paragraph 0032-0035) and shows in Fig. 3, a light sensitive active matrix liquid crystal display comprising:

reflective display electrode (50) and counter electrode (34); liquid crystal material (20); and a plurality of TFT (applicant's light sensitive elements) located within the display wherein the display selectively causing the pixels to provide a bright and uniform image (bright and uniform image is obtained by causing the pixels to provide light). Accordingly, claims 27-29 are anticipated.

Claims 1-5, 9, 12-15, 17, 19-22, 24-26, 38 and 42 lack an inventive step under PCT Article 33(3) as being obvious over Kim as applied to claims 10, 11, 16, 18 and 23 above and in view of Yang, USPAT 6,295,113.

Kim differs from the claimed invention because he does not explicitly disclose the limitation such as changing an electric potential between the front and the rear electrode layer to selectively modify portions of the liquid crystal material to change the polarization of the light incident thereon.

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Yang discloses a liquid crystal display comprising transparent front (206a) and rear electrode (206b) layer (Fig. 2). Yang also discloses that by continuously altering the applied voltage between transparent electrodes (206a and 206b), various colors can be displayed by variation of polarization status of red, green and blue lights with different wavelengths (col. 6, lines 3-6).

Yang is evidence that ordinary workers in the art of liquid crystal would find a reason, suggestion or motivation to change the electrical potential between two transparent electrodes.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the display of Kim by changing the electrical potential between the rear electrode layer and the front electrode layer to selectively modify portions of the liquid crystal material to change the polarization of the incident light so that various color can be displayed.

Accordingly, claims 1, 2, 9 and 26 would have been obvious.

As to claim 17, using a reflective electrode to obtain a reflective display is common and known in the art and thus would have been obvious.

As to claims 3, 4, 12, 19, 24, 38 and 42, Kim differs from the claimed invention because he does not explicitly disclose that one of the transistors senses ambient light while the other one is inhibited from sensing ambient light. However, a liquid crystal display with plurality of light sensitive elements (thin film transistors) wherein one of the transistor senses ambient light (transmission mode) while the other one is inhibited from sensing ambient light (reflection mode) is common and known in the art and thus would have been obvious to one of ordinary skill in the art to use transistors (light sensitive elements) wherein one of the transistor senses ambient light while the other one inhibited from sensing ambient light for several reasons such as to optimize device performance by allowing one transistor to sense ambient light while inhibiting the other transistor from sensing ambient light so that the display that is capable of displaying a highly visible image without depending on the environment of use and also capable of further suppressing the power consumption is obtained.

Accordingly, claims 3 and 4 would have been obvious.

As to claim 5, it is common and known in the art to use thin film transistor of amorphous silicon since they are very easy to manufacture and cheap and thus would have been obvious.

As to claims 13-15, 20-22 and 25, using a processor for receiving information is common and known in the art and thus would have been obvious to avail a proven technique.

Claims 30-37 and 43-45 lack an inventive step under PCT Article 33(3) as being obvious over Noritake as applied to claims 27-29 above.

Noritake differs from the claimed invention because he does not explicitly disclose that one of the transistors senses ambient light while the other one is inhibited from sensing ambient light. However, a liquid crystal display with plurality of light sensitive elements (thin film transistors) wherein one of the transistor senses ambient light (transmission mode) while the other one is inhibited from sensing ambient light (reflection mode) is common and known in the art and thus would have been obvious to one of ordinary skill in the art to use transistors (light sensitive elements) wherein one of the transistor senses ambient light while the other one inhibited from sensing ambient light for several reasons such as to optimize device performance by allowing one transistor to sense ambient light while inhibiting the other transistor from sensing ambient light so that the display that is capable of displaying a highly visible image without depending on the environment of use and also capable of further suppressing the power consumption is obtained.

Further, using a processor for receiving information is common and known in the art and thus would have been obvious to avail a proven technique.

Accordingly, claims 30-33, 35-37 and 43 would have been obvious.

As to claim 34, using a passive liquid crystal display is considered as intended use and thus would have been obvious.

As to claim 44, using the display device as one of multi-domain vertical alignment liquid crystal display, patterned vertical alignment liquid crystal display, in-plane switching liquid crystal display, super-twisted nematic liquid crystal display, plasma display, electroluminescent display, liquid crystal on silicon display is considered as intended use and thus would have been obvious.

As to claim 45, using a backlight in a liquid crystal display is common and known in the art for reasons such as to obtain a display that is capable of operating without the use of external light and thus suitable for night use and thus would have been obvious. Further, modifying the intensity of backlight based upon the light sensitive elements is common and known in the art and thus would have been obvious to optimize device performance.

Claims 6 and 39 lacks an inventive step under PCT Article 33(3) as being obvious over Kim in view of Yang as applied to claims 1-5, 9, 12-15, 17, 19-22, 24-26, 38 and 42 above and further in view of Hanihara et al., (Hanihara), USPAT 5,990,988.

Kim does not explicitly disclose that the terminals of one transistor is connected with the terminal of the other transistor with a conductor.

Hanihara discloses a liquid crystal display including plurality of transistors wherein the terminal of one transistor is connected with the terminal of the other transistor with wiring layers (applicant's conductor). Hanihara also discloses that such an arrangement is advantageous since it will provide a reliable device (col. 3, lines 52-60, col. 4, lines 1-4).

Hanihara is evidence that ordinary workers in the art would find a reason, suggestion or motivation to connect the terminal of one transistor with the terminal of the other transistor with a conductor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the display device of Kim when modified by Seiko by connecting one terminal of one

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US02/25573

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

transistor with a terminal of another transistor with a conductor so that a reliable device is obtained.

Claims 7, 8, 40 and 41 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest the claimed liquid crystal display device wherein the first conductor that is connecting a terminal of the first transistor with a terminal of the second transistor is capacitively connected to another line with

----- NEW CITATIONS -----

PATENT COOPERATION TREATY

KLR 0574

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SEP 25 2003

CHERNOFF, VILHAUER,
McCLUNG & STENZEL

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
KEVIN L. RUSSELL
1600 ODS TOWER
601 SW SECOND AVENUE
PORTLAND, OREGON 97204

DOCKETED: 11/18/03

REMINDER: _____

BY: [Signature]

PLANAR

PCT

WRITTEN OPINION

(PCT Rule 66)

Applicant's or agent's file reference KLR 0594.026		Date of Mailing (day/month/year) REPLY DUE within 2 months/days from the above date of mailing
International application No. PCT/US02/25573	International filing date (day/month/year) 12 August 2002 (12.08.2002)	Priority date (day/month/year) 20 February 2002 (20.02.2002)
International Patent Classification (IPC) or both national classification and IPC IPC(7): G02F 1/136 and US Cl.: 349/41, 42, 48, 96, 114		
Applicant PLANAR SYSTEMS, INC.		

1. This written opinion is the first (first, etc.) drawn by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2 (a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☒ Certain observations on the international application
3. The applicant is hereby **invited to reply** to this opinion.

When? See the time limit indicated above. ~~The applicant may, before the expiration of that time limit, request this Authority to grant an extension. See rule 66.2(d).~~

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.
For an informal communication with the examiner, see Rule 66.6

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 20 June 2004 (20.06.2004).

Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230	Authorized officer <u>[Signature: Sharm J. Chopra]</u> Tarifur R Chowdhury Telephone No. (703) 308-1782
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PATENT COOPERATION TREATY

From the:
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
KEVIN L. RUSSELL
1600 ODS TOWER
601 SW SECOND AVENUE
PORTLAND, OREGON 97204

PCT

WRITTEN OPINION

(PCT Rule 66)

Applicant's or agent's file reference KLR 0594.026		Date of Mailing (day/month/year) 18 SEP 2003 REPLY DUE within 2 months/days from the above date of mailing
International application No. PCT/US02/25573	International filing date (day/month/year) 12 August 2002 (12.08.2002)	Priority date (day/month/year) 20 February 2002 (20.02.2002)
International Patent Classification (IPC) or both national classification and IPC IPC(7): G02F 1/136, 1/1335 and US Cl.: 349/41, 42, 48, 96, 114		
Applicant PLANAR SYSTEMS, INC.		

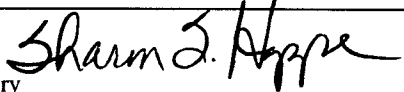
1. This written opinion is the first (first, etc.) drawn by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:
 - ☒ Basis of the opinion
 - ☐ Priority
 - ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - ☐ Lack of unity of invention
 - ☒ Reasoned statement under Rule 66.2 (a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - ☐ Certain documents cited
 - ☐ Certain defects in the international application
 - ☒ Certain observations on the international application
3. The applicant is hereby **invited to reply** to this opinion.

When? See the time limit indicated above. ~~The applicant may, before the expiration of that time limit, request this Authority to grant an extension. See rule 66.2(d).~~

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 *bis*.
For an informal communication with the examiner, see Rule 66.6

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 20 June 2004 (20.06.2004).

Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230	Authorized officer  Tarifur R Chowdhury Telephone No. (703) 308-1782
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WRITTEN OPINION

International application No.

PCT/US02/25573

I. Basis of the opinion

1. With regard to the **elements** of the international application:*

- ☒ the international application as originally filed
- ☒ the description:
 pages 1-18 _____, as originally filed
 pages NONE _____, filed with the demand
 pages NONE _____, filed with the letter of _____.
- ☒ the claims:
 pages 19-27 _____, as originally filed
 pages NONE _____, as amended (together with any statement) under Article 19
 pages NONE _____, filed with the demand
 pages NONE _____, filed with the letter of _____.
- ☒ the drawings:
 pages 1-11 _____, as originally filed
 pages NONE _____, filed with the demand
 pages NONE _____, filed with the letter of _____.
- ☐ the sequence listing part of the description:
 pages NONE _____, as originally filed
 pages NONE _____, filed with the demand
 pages NONE _____, filed with the letter of _____.

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the written opinion was drawn on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE _____
- ☒ the claims, Nos. NONE _____
- ☒ the drawings, sheets/fig NONE _____

5. ☐ This opinion has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed."

WRITTEN OPINIONInternational application No.
PCT/US02/25573**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. STATEMENT**

Novelty (N)	Claims <u>7, 8, 40, 41</u>	YES
	Claims <u>10, 11, 16, 18, 23, 27-29</u>	NO
Inventive Step (IS)	Claims <u>7, 8, 40, 41</u>	YES
	Claims <u>1-6, 9-39, 42-45</u>	NO
Industrial Applicability (IA)	Claims <u>1-45</u>	YES
	Claims <u>NONE</u>	NO

2. CITATIONS AND EXPLANATIONS

Please See Continuation Sheet

WRITTEN OPINION

International application No.

PCT/US02/25573

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the questions whether the claims are fully supported by the description, are made:

Claims 10 and 29 are objected to under PCT Rule 66.2(a)(v) as lacking clarity under PCT Article 6 because claims are indefinite for the following reason(s):

Claim 10 recites the limitation "said first" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 29 recites the limitation "said light valve" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

TIME LIMIT:

The time limit set for response to a Written Opinion may not be extended. 37 CFR 1.484(d). Any response received after the expiration of the time limit set in the Written Opinion will not be considered in preparing the International Preliminary Examination Report.

V. 2. Citations and Explanations:

Claims 10, 11, 16, 18 and 23 lack novelty under PCT Article 33(2) as being anticipated by Kim, USPAT 5,568,292.

Kim discloses and shows in Fig. 5, an active matrix light sensitive display comprising:

(a) a light valve including a front polarizing element (11), a rear polarizing element (11), and a liquid crystal material (applicant's light rotating material) located between the front polarizing element and the rear polarizing element; and (b) a plurality of thin film transistors (3) (applicant's light sensitive elements) located between either the front polarizing element or the rear polarizing element and the light rotating material. Accordingly, claims 10, 11 and 23 are anticipated.

As to claim 16, Kim also shows in Fig. 5 that the display also comprising:

a transparent counter electrode layer (9) (applicant's front electrode layer), a transparent picture element electrode (2) (applicant's rear electrode layer), and a liquid crystal material (applicant's light rotating material) located between the front electrode layer and the rear electrode layer wherein the front electrode layer and the rear electrode layer defining a plurality of pixels within the light rotating material.

Accordingly, claim 16 is anticipated.

As to claim 18, Kim also shows in Fig. 5 that the plurality of light sensitive elements (3) are located at least partially between the pixels, with respect to a perpendicular direction to the front of the display.

Claims 27-29 lack novelty under PCT Article 33(2) as being anticipated by Noritake et al., (Noritake), US 2001/0046013.

Noritake discloses (page 2, paragraph 0032-0035) and shows in Fig. 3, a light sensitive active matrix liquid crystal display comprising:

reflective display electrode (50) and counter electrode (34);

liquid crystal material (20); and

a plurality of TFT (applicant's light sensitive elements) located within

the display wherein the display selectively causing the pixels to provide a bright

and uniform image (bright and uniform image is obtained by causing the pixels to provide light).

Accordingly, claims 27-29 are anticipated.

Claims 1-5, 9, 12-15, 17, 19-22, 24-26, 38 and 42 lack an inventive step under PCT Article 33(3) as being obvious over Kim as applied to claims 10, 11, 16, 18 and 23 above and in view of Yang, USPAT 6,295,113.

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Kim differs from the claimed invention because he does not explicitly disclose the limitation such as changing an electric potential between the front and the rear electrode layer to selectively modify portions of the liquid crystal material to change the polarization of the light incident thereon.

Yang discloses a liquid crystal display comprising transparent front (206a) and rear electrode (206b) layer (Fig. 2). Yang also discloses that by continuously altering the applied voltage between transparent electrodes (206a and 206b), various colors can be displayed by variation of polarization status of red, green and blue lights with different wavelengths (col. 6, lines 3-6).

Yang is evidence that ordinary workers in the art of liquid crystal would find a reason, suggestion or motivation to change the electrical potential between two transparent electrodes.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the display of Kim by changing the electrical potential between the rear electrode layer and the front electrode layer to selectively modify portions of the liquid crystal material to change the polarization of the incident light so that various color can be displayed.

Accordingly, claims 1, 2, 9 and 26 would have been obvious.

As to claim 17, using a reflective electrode to obtain a reflective display is common and known in the art and thus would have been obvious.

As to claims 3, 4, 12, 19, 24, 38 and 42, Kim differs from the claimed invention because he does not explicitly disclose that one of the transistors senses ambient light while the other one is inhibited from sensing ambient light. However, a liquid crystal display with plurality of light sensitive elements (thin film transistors) wherein one of the transistor senses ambient light (transmission mode) while the other one is inhibited from sensing ambient light (reflection mode) is common and known in the art and thus would have been obvious to one of ordinary skill in the art to use transistors (light sensitive elements) wherein one of the transistor senses ambient light while the other one inhibited from sensing ambient light for several reasons such as to optimize device performance by allowing one transistor to sense ambient light while inhibiting the other transistor from sensing ambient light so that the display that is capable of displaying a highly visible image without depending on the environment of use and also capable of further suppressing the power consumption is obtained.

Accordingly, claims 3 and 4 would have been obvious.

As to claim 5, it is common and known in the art to use thin film transistor of amorphous silicon since they are very easy to manufacture and cheap and thus would have been obvious.

As to claims 13-15, 20-22 and 25, using a processor for receiving information is common and known in the art and thus would have been obvious to avail a proven technique.

Claims 30-37 and 43-45 lack an inventive step under PCT Article 33(3) as being obvious over Noritake as applied to claims 27-29 above.

Noritake differs from the claimed invention because he does not explicitly disclose that one of the transistors senses ambient light while the other one is inhibited from sensing ambient light. However, a liquid crystal display with plurality of light sensitive elements (thin film transistors) wherein one of the transistor senses ambient light (transmission mode) while the other one is inhibited from sensing ambient light (reflection mode) is common and known in the art and thus would have been obvious to one of ordinary skill in the art to use transistors (light sensitive elements) wherein one of the transistor senses ambient light while the other one inhibited from sensing ambient light for several reasons such as to optimize device performance by allowing one transistor to sense ambient light while inhibiting the other transistor from sensing ambient light so that the display that is capable of displaying a highly visible image without depending on the environment of use and also capable of further suppressing the power consumption is obtained.

Further, using a processor for receiving information is common and known in the art and thus would have been obvious to avail a proven technique.

Accordingly, claims 30-33, 35-37 and 43 would have been obvious.

As to claim 34, using a passive liquid crystal display is considered as intended use and thus would have been obvious.

As to claim 44, using the display device as one of multi-domain vertical alignment liquid crystal display, patterned vertical alignment liquid crystal display, in-plane switching liquid crystal display, super-twisted nematic liquid crystal display, plasma display, electroluminescent display, liquid crystal on silicon display is considered as intended use and thus would have been obvious.

As to claim 45, using a backlight in a liquid crystal display is common and known in the art for reasons such as to obtain a display that is capable of operating without the use of external light and thus suitable for night use and thus would have been obvious. Further, modifying the intensity of backlight based upon the light sensitive elements is common and known in the art and thus would have been obvious to optimize device performance.

Claims 6 and 39 lacks an inventive step under PCT Article 33(3) as being obvious over Kim in view of Yang as applied to claims 1-5, 9, 12-15, 17, 19-22, 24-26, 38 and 42 above and further in view of Hanihara et al., (Hanihara), USPAT 5,990,988.

Kim does not explicitly disclose that the terminals of one transistor is connected with the terminal of the other transistor with a conductor.

Hanihara discloses a liquid crystal display including plurality of transistors wherein the terminal of one transistor is connected with the terminal of the other transistor with wiring layers (applicant's conductor). Hanihara also discloses that such an arrangement is advantageous since it will provide a reliable device (col. 3, lines 52-60, col. 4, lines 1-4).

Hanihara is evidence that ordinary workers in the art would find a reason, suggestion or motivation to connect the terminal of one transistor with the terminal of the other transistor with a conductor.

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the display device of Kim when modified by Seiko by connecting one terminal of one transistor with a terminal of another transistor with a conductor so that a reliable device is obtained.

Claims 7, 8, 40 and 41 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest the claimed liquid crystal display device wherein the first conductor that is connecting a terminal of the first transistor with a terminal of the second transistor is capacitively connected to another line with a capacitor.

----- NEW CITATIONS -----

US 5,990,988 A (HANIHARA et al) 23 November 1999, see col. 3, lines 52-60 & col. 4, lines 1-4.

US 6,295,113 A (YANG) 25 September 2001, see col. 6, lines 3-6 and Fig. 2.

US 6,380,995 A (KIM) 30 April 2002, see the entire document.

us 2002/0126240 A1 (SEIKI et al) 12 SEptember 2002, see page 1, paragraph 0010 & Fig. 2B.